REMARKS

Claims 97-100 and 105-110 have been canceled as being drawn to a non-elected invention. Accordingly, claims 95, 96, and 101-104 will be pending upon entry of this amendment.

The foregoing amendments should in no way be construed as an acquiescence to any of the Examiner's rejections, and have been made solely to expedite examination of the present application. Applicants reserve the right to pursue the claims as originally filed in this or a separate application(s). No new matter has been added.

Rejection of Claims 95, 96, and 101-103 Under 35 U.S.C.§102(a)

Claims 95, 96, and 101-103 are rejected under 35 U.S.C. §102(a) "as being anticipated by Littler *et al.* as evidenced by Harlow & Lane Cold Spring Harbor Labs (1988)." In particular, the Examiner states that a portion of the MCP protein described in Littler *et al.* (residues 354-360) share 100% identity with SEQ ID NO:6 (residues 103-109). The Examiner further states that the recombinantly produced peptides produced antibodies reactive with HHV-6. From this, the Examiner concludes that "the peptides [described in Littler *et al.*] meet the structural limitations of the claims and are administered to animals producing an immunogen specific response, the reference teachings inherently anticipate a therapeutic composition comprising the peptide." Applicants respectfully traverse this rejection.

The subject matter of claims 95, 96, and 101-103 encompasses therapeutic compositions and isolated polypeptides which comprise at least an epitope-containing portion of SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, or SEQ ID NO:16. The SEQ ID NOs:6, 8, 10, and 16 correspond to the various forms of chain 2 of T cell reactive feline protein (TRFP). Littler *et al.* fail to teach or suggest an isolated polypeptide having this structure.

Littler *et al.* teach the identification, cloning, and expression of the major capsid protein (MCP) gene of human herpesvirus 6, a protein entirely unrelated to TRFP and with no known immunological cross-reactivity to TRFP. While the Examiner asserts that a portion of the MCP of human herpesvirus 6 is identical to residues 103-109 of SEQ ID NO:6, Littler *et al.* do **not** teach or suggest that this portion, or any other portion of MCP, contains at least one epitope, much less an epitope in common with SEQ ID NO:6 as claimed. Indeed, even if an epitope existed within this common stretch of amino acids, *i.e.*, an epitope recognized within the context of the whole MCP protein, the epitope would not be recognized by a B or T cell specific for

human T cell reactive protein (TRFP), as claimed. A common epitope is one that is recognized on two different polypeptides by the same T or B cell receptor, *i.e.*, in the present case, a T or B cell receptor specific for TRFP.

T and B-cell epitopes are involved in initiation and perpetuation of an immune response to a protein allergen. A T or B-cell epitope is the basic element, or smallest unit of recognition, by a T or B-cell receptor. Recognition of these epitopes leads to the production of a variety of cytokines, antibodies, and other immune modulators which, in turn, leads to the generation of allergic symptoms in individuals.

A B cell specific for a cat protein allergen, *i.e.*, TRFP, would not recognize a MCP since B-cell recognition of protein allergens depends on the recognition of complex conformational epitopes which are particular to the full-length (*e.g.*, native) protein allergens. Therefore, a B cell which recognizes an epitope of a protein allergen, such as TRFP, would not recognize the same protein sequence within the context of another unrelated protein allergen which has an entirely different conformation, such as MCP.

In other words, based on the fact that TRFP and MCP are structurally and functionally unrelated (*e.g.*, have a different overall primary sequence and different glycosylation patterns), the seven amino acids of MCP which are shared with TRFP would not be recognized within the context of the native MCP by a B cell specific for TRFP, since these amino acids are in a very different structural context (*e.g.*, secondary and tertiary conformation) within the MCP as compared to the TRFP. It is well known that the reactivity of isolated peptides does not resemble the reactivity of the same region in the intact protein because of interactions with other parts of the molecule and the loss of flexibility. Therefore, even assuming that the seven amino acid sequence within the primary structure of the MCP of human herpesvirus 6 does comprise a B or T cell epitope (which the Examiner has provided no evidence of), the amino acid sequence would not be recognized by a B or T cell specific for human T cell reactive protein. Indeed, it should be noted that the position of the seven amino acids shared between MCP and TRFP is vastly different within the MCP protein than it is within the TRFP allergen. Therefore, a B cell receptor specific for TRFP, which recognizes epitopes within the context of the full length TRFP in its native conformation, would not recognize the same linear sequences within an entirely different and unrelated protein, such as MCP.

Similarly, a T cell specific for TRFP also would not recognize MCP since T cell recognition of protein allergens depends on the manner in which the whole protein is

proteolytically processed and presented by antigen presenting cells (APCs) to T cell receptors. This process, and the nature of the peptides which are ultimately presented to T cells, differs for every protein depending on its structure, including the structure of critical regions outside the T cell epitopes. Therefore, peptides (such as those including the common seven amino acid sequence between TRFP and MCP) processed and presented by APCs from MCP, and their ability to be recognized by T cells, will significantly differ from those processed and presented by APCs from TRFP, based on the significant difference in overall structure between the two proteins.

Accordingly, because T cell recognition of epitopes within protein allergens depends on the manner in which the whole protein allergen is proteolytic processed and presented by APCs, a T cell epitope recognized by a T cell receptor specific for a TRFP allergen would **not** be recognized by a T cell specific for a MCP, since the structure of these two proteins, including critical regions outside the protein's epitopes, is vastly different and, thus, the nature of the epitopes recognized by T cells specific for these protein allergens also is vastly different.

Thus, it follows that MCP is not a peptide or protein that comprises an epitope in common with TRFP, as presently claimed.

Based on at least the foregoing, claims 95, 96, and 101-103 are novel in view of the cited reference.

Rejection of Claim 104 Under 35 U.S.C.§103(a)

Claim 104 is rejected under 35 U.S.C. §103(a) as "being unpatentable over Littler *et al.* in view of Hirschmann *et al.* (U.S. Patent No. 3,846,399)." Applicants respectfully traverse this rejection.

As described above, the substance of which is reiterated here, Littler *et al.* fail to teach or suggest the subject matter encompassed by the pending claims. Further, Hirschmann *et al.* fail to cure the deficiencies of Littler *et al.* Since Hirschmann *et al.* merely describe a generic method for synthesizing polypeptides. Hirschmann *et al.* fail to teach anything with respect to human T cell reactive protein or epitope-containing peptides derived therefrom. Accordingly, claim 104 is patentable in view of the cited references.

SUMMARY

In view of the amendments and remarks set forth above, it is respectfully submitted that this application is in condition for allowance. If there are any remaining issues or the Examiner believes that a telephone conversation with Applicants' Attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at (617) 227-7400.

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Respectfully submitted,

By _____

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